

ABSTRACT OF THE DISCLOSURE

5 A method of making a heterojunction bipolar transistor comprises the steps of: forming a mask layer on a compound semiconductor film by using a photomask for forming an emitter; and forming the emitter by wet-etching the compound semiconductor film by using the mask layer. The photomask has a pattern thereon for forming the emitter. The pattern is defined by a first area R associated with the shape of the emitter to be formed, and a plurality of second areas  $T_1$  to  $T_4$ . Each of the second areas  $T_1$  to  $T_4$  includes first and second sides  $S_1$  and  $S_2$  meeting each other to form an acute angle therebetween, and a third side  $S_3$  in contact with the first area R. In each of the second areas  $T_1$  to  $T_4$ , one side  $S_3$  of the two sides meeting each other to form a right angle therebetween is in contact with one side of the area R, whereas the other side  $S_1$  is connected to another side of the first area R to form a line segment. Using this photomask, an etching mask is arranged such that a side  $S_{11}$  of the first area R is oriented in  $\{011\}$  direction of the emitter crystal film. When the emitter crystal film is etched by use of the etching mask, a rectangular emitter is obtained.